

*Bakersfield*

DEPARTMENT OF CONSERVATION

## DIVISION OF OIL AND GAS

1416 9th STREET, ROOM 1310

SACRAMENTO, CALIFORNIA 95814

(916) 445-9686



April 10, 1986

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DIVISION OF OIL & GAS  
BAKERSFIELD

Mr. Nathan Lau, Chief  
UIC Section  
Environmental Protection Agency  
215 Fremont Street  
San Francisco, CA 94105

Dear Nathan:

The Division of Oil and Gas has reviewed the application for an "Aquifer Exemption" in the Poso Creek field in Kern County. The application was submitted by Berry Petroleum Company.

The proposal is to exempt the Olcese formation within the boundaries of the field. The depth to the top of the Olcese is 3,215' at the injection well. The oil producing intervals in the field are stratigraphically shallower than the Olcese and contain better quality water than the Olcese. Water analyses indicate that the injection fluid has a TDS of 1,188 Mg/l.

The Santa Margarita formation is also stratigraphically shallower and is currently used as an injection interval, however, the operator is unable to dispose of all his produced water into the Santa Margarita without overpressuring. To prevent overpressuring, the operator has hauled water to another injection well that is operated by another company.

The Santa Margarita has been used for injection purposes without causing any damage by vertical or lateral migration to waters of better quality. Similarly, the Division believes that injection into the Olcese, which is about 500 feet deeper than the Santa Margarita, will not cause the displacement of poor quality water into areas shallower than the Santa Margarita.

A public notice regarding the proposed exemption was published in the Bakersfield Californian on August 8, 9, and 10, 1985. No comments were received. The Division contacted local water agencies in the Bakersfield area to determine jurisdiction, however, the exemption area is not within the boundaries of a water district. The Central Valley Regional Water Quality Control Board was also contacted and provided comments and recommendations (see attached) regarding the exemption. The Board stated that they did not

Nathan Lau  
Page 2  
April 10, 1986

know of anyone currently using water from the Olcese formation in the area, and that the poor water quality (8130 Mg/l TDS) and the 3,200-foot depth suggests that the Olcese water may not have a potential for beneficial uses. However, the Board does state that the Olcese might be used for industrial or stock watering.

The Board also recommended that the applicant address comments regarding Olcese water being displaced easterly into better quality water if the prevention of eastward movement is considered necessary. The applicant responded to the comments by letter of March 19 (see attached). The applicant is unable to conclusively prove that the faults have acted as traps for oil, but past injection into shallower formations has not resulted in any apparent migration.

Based upon the information presented in this application, the Division recommends the Olcese formation within the boundaries of the Poso Creek field be granted an aquifer exemption.

Sincerely,

  
M. G. Mefferd  
State Oil and Gas Supervisor

## Attachments

Ken. Chaff  
Ken. Fink  
Rd. Mt. } 514005735  
a  
Pulace  
enc. Sup  
all Mod

ADDENDUM TO OLCESE ZONE EXEMPTION

POSO CREEK FIELD-KERN CO.

OPERATOR: Berry Petroleum Company

OIL & GAS PRODUCTION HISTORY: The Olcese formation is not, nor ever has been, productive in Poso Creek Oil field. The Olcese is presently oil productive in a variety of fields in Kern County with Ant Hill, Edison and Mountain View fields being the closest in proximity (see attached map). The formation has also been shown to be oil bearing, but noncommercial, in Mount Poso field (see map). Oil production from the Premier Area of Poso Creek field is from four zones; the Macoma (Etchegoin), the Basal Etchegoin, the Chanac, and the Kelly 2 (Santa Margarita), all of which are stratigraphically shallower. These shallower zones also contain water of better quality, than the proposed injection zone. In addition to those fields where the Olcese Zone is oil and gas productive, the Olcese has been exempted in the Round Mountain field and the zone waters exceed 10,000 Mg/l TDS in the Kern Bluff and Kern River fields. The average depth of the Olcese in these three fields is 1,000', 3,000' and 3,000', respectively. Within the Poso Creek field, cumulative oil production from all zones from December 1920 to December 1984 has been 75 million barrels of oil. Approximately 58 million barrels of water is produced annually, with the majority reinjected as either steam or waste water.

GENERAL GEOGRAPHIC DESCRIPTION: Low, gently rolling hills and valleys draining primarily southwesterly into Poso Creek. Approximately 8½ miles north of the developed city limits of Bakersfield (see map).

CAUSE FOR EXEMPTION APPLICATION: The current disposal zone (Santa Margarita) has insufficient permeability to allow disposal of the large amounts of water produced.

OLCESE ZONE ANALYSIS: See attached.

AQUIFER EXEMPTION  
SUMMARY SHEET

Date application received in Region: \_\_\_\_\_

Date application sent the Headquarters: \_\_\_\_\_

Date action needed: \_\_\_\_\_

APPLICANT: Berry Petroleum

HEARING DATE: \_\_\_\_\_

I.D. NUMBER: \_\_\_\_\_

EXEMPTION DESCRIPTION (Township, Range, Section, Quarter section and  
of affected area):

T.27S, R.27E, M.D.B.&M.; W $\frac{1}{2}$  Sec 28 and E $\frac{1}{2}$  Sec 29

FIELD: Poso Creek - Kern County

AQUIFER TO BE EXEMPTED: Olcese formation

JUSTIFICATION FOR EXEMPTION:

- (☒) Aquifer is not a source of drinking water and will not serve as a source of drinking water in the future because it:
- (☒) Has a TDS level above 3,000
  - ( ) Is hydrocarbon bearing
  - ( ) Is too deep
  - ( ) Is a Class III well subject to subsidence
  - ( ) Is too contaminated (name contaminant(s)):
  - ( ) Other: \_\_\_\_\_

PURPOSE OF INJECTION: The exempted Santa Margarita formation, which is stratigraphically shallower, does not have sufficient permeability to allow disposal of the entire volume of oilfield waste water that is produced by the applicant. Approximately 8,300 barrels per day is injected into the Santa Margarita. The remaining water (2,000-4,000B/D) hauled to another injection well operated by another operator.

INJECTED WATER QUALITY: 1,200 ppm TDS INJECTION WATER SOURCE: produced water

FORMATION WATER QUALITY: 8,130 ppm TDS

APPLICANT: \_\_\_\_\_

HEARING DATE: \_\_\_\_\_

I.D. NUMBER: \_\_\_\_\_

OIL OR MINERAL PRODUCTION HISTORY: The Poso Creek field is in central Kern County. The first drilling within the present field boundaries occurred in 1913 and the first production occurred in 1919. Production occurs from three areas - the Enas, McVann, and Premier. The average depth of the productive zones is 1,850 feet. The proposed injection interval is deeper than 3,200 feet. There is a total of 952 oil wells and 267 Class II wells in the field. Present field production is 1,800,000 barrels of oil per year and 58,600,000 barrels of water per year.

ACTIVE INJECTION WELLS INJECTING INTO SAME FORMATION:

<u>Field</u>	<u>Location</u>	<u>Injection Interval</u>	<u>Injection Source</u>	<u>Total Depth</u>
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There are no other wells injecting into the Olcese formation within the proposed aquifer exemption area.

WATER USE IN AREA: The area is primarily an oilfield area with minor agriculture and grazing.

REMARKS: Public Notice was published in the Bakersfield Californian on August 8, 9, 10, 1985. No comments were received either in support or opposition to this proposal.

SUPPLEMENT TO APPLICATION FOR CLASS II PRIMACY  
NON-HYDROCARBON PRODUCING INJECTION ZONES -- DISTRICT 4

1. Field Poso Creek
2. Zone Olcese
3. Depth to top of zone 3,215'
4. Thickness 250'
5. Areal Extent W $\frac{1}{2}$  Sec 28 and E $\frac{1}{2}$  Sec 29, T.27S, R.27E, M.D.B.&M.
6. TDS of zone 8130 ppm TDS (11.5ppm Boron)
7. TDS of Injection Fluid 1200ppm TDS (1.6ppm Boron)
8. Are Injection Fluids other than Produced Water? No
9. Date Injection Began No injection into Olcese to date
0. Miscellaneous Information The Olcese zone is stratigraphically below all producing zones within the field.
1. Drinking Water Aquifer Declaration Is not a source
2. Depth Fm: 3215'  
Deepest Water Well: 1613'
3. Distance to Towns 8 $\frac{1}{2}$  miles to Bakersfield
4. Land ownership Primarily oil operations, dry farming, and grazing.
5. Alternate Water Source -- Poso Creek is used as a source to support animal grazing.
6. Unusual Geology N-S trending fault acts as permeability barrier to the east.
7. Yield of Water Unknown - never tested